

PRUNING TREES

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Proper pruning is the removal of living, dying and dead parts of trees to benefit them. If you prune properly, the tree can readily cope with the injury. If you prune improperly, you threaten the tree's health.

Pruning Techniques:

Twigs and small branches: When pruning twigs and small branches, always cut back to a vigorous bud or an intersecting branch. When cutting back to a bud, choose a bud that is pointing in the direction you wish the new growth to take. Make the pruning cut at approximately a 45° angle 1/4" above the bud (Figure 1).

Make pruning cuts about 1/4 inch (6 mm) above a bud and slightly angled away. Source: After Caldwell et al. 1972, p.10.

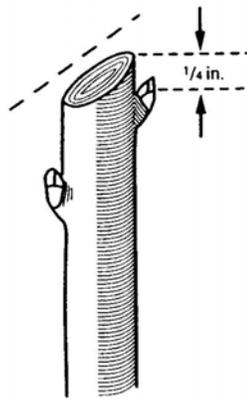


FIGURE 1

Pruning branches greater than 1/2" in diameter. Pruning cuts should be made just outside the branch bark ridge and the branch collar. Branches should not be removed flush with the trunk (Figure 2).

Pruning cuts should be made just outside the branch bark ridge (top of cut) and the collar (bottom of cut) so that the bottom of the cut is angled slightly outward. Source: After International Society of Arboriculture 1995, p.3.

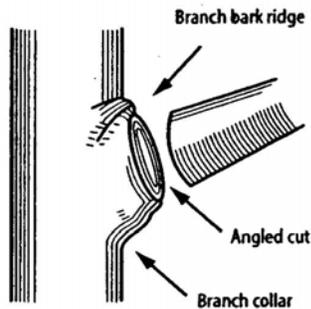


FIGURE 2

When cutting branches greater than 1 1/2" in diameter, use a 3-part cut. This can be done by first sawing the bottom of the branch, 6 to 12 inches out from the trunk and about 1/3 of the way through the branch. Next, make a second cut from the top, 2-3 inches farther out from the undercut, until the branch falls away. The resulting stub can be cut back to the collar of the branch as described above (Figure 3).

Hardwoods

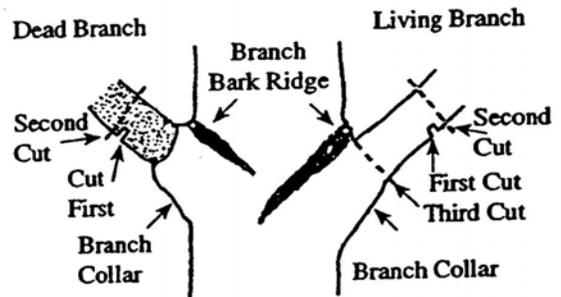
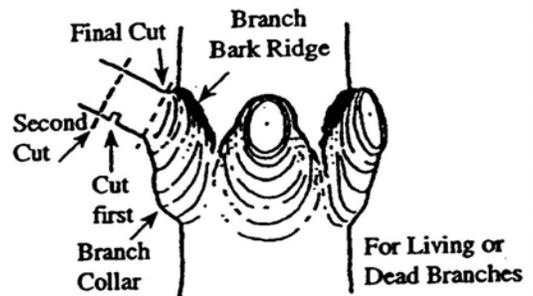


FIGURE 3

Conifers



Deciduous shade trees: Shade trees and ornamental trees are usually pruned to enhance their shape, control their size, and to remove dead wood. As a rule for deciduous shade trees, the central leader of the tree should not be pruned (Figure 4-A). The height of the lowest branch can be from a few inches above the ground (for screening or windbreaks) to 12 feet or more above the ground (as needed near a street or patio). For greatest strength, branches selected for permanent scaffolds should have wide angle of attachment with the trunk. Branches of less than 30° from the main trunk result in a very higher percentage of breakage while those between 60° and 70° have very small breakage rate.

Major scaffold branches of shade trees should be spaced at least 8 inches and preferably 20 inches apart vertically. Radial branch distribution should allow 5 to 7 scaffolds to fill the circle of space around a trunk (Figure 5 & 6). Radial spacing prevents one limb from overshadowing another, which in turn, reduces competition for light and nutrients.

Central-leader and open-center training systems.



FIGURE 4-A



FIGURE 4-B

wide crotch angles that are evenly distributed about the trunk and that are separated vertically from each other in two to three tiers. The lower primary scaffold limbs arise from the trunk at 45° angles and are longer than the upper primary limbs, which are at 60° to 90° angles to the trunk. Since the shorter upper branches are attached at wider angles, their vigor is reduced, giving the tree a pyramid shape. The number of tiers depends on the ultimate tree height desired. This shape is good for light penetration since the top does not shade the lower limbs. The central leader system works well for apple, pear and persimmon.

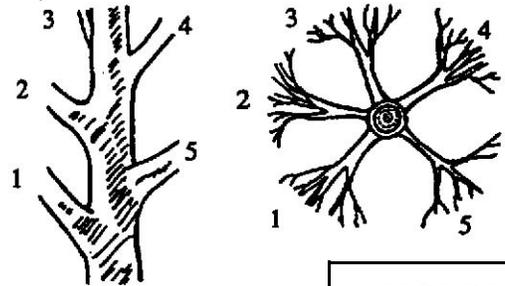


FIGURE 5

Scaffold branches of trees should have proper vertical and radial spacing on the trunk.

The open center system (Figure 4B) is the most common system used for fruit trees. It is based on development of 3 to 4 scaffold branches that emerge at wide crotch angles from a main trunk starting about 12 inches from the ground. The primary scaffold branches originating at 45° to 60° angles from the trunk create an open tree center. To prevent the top from shading the lower limbs, the center must be open. This is the most common form used for peaches, nectarine, pear, plum apricot and cherry.

Adapted from California Master Gardener Handbook, 2002 and Arizona Master Gardener Handbook, 1999.

Pruning Conifers: Conifers usually require less pruning than broad leaf trees. Conifers usually do not need pruning for spacing of lateral limbs. Several branches arising at or near the trunk seldom subdue the main leader of a conifer; thus, whorls of branches or those arising close together can remain because it is unlikely they will crowd out the leader. Adequate vertical spacing between individual branches along the trunk occurs naturally in most conifers.

Fruit Trees: The general purpose of pruning fruit trees is to regulate growth, increase yields, and improve fruit size and quality.

There are two primary training systems for fruit trees: The central leader system and the open center system. Which system to use depends upon the natural growth habits and structural form of the tree. The central leader system (Figure 4-A) employs an upright vertical trunk with 3 to 10 primary scaffold limbs. These primary scaffold limbs should have

Well-spaced branches (left) are less likely to split or break than those close together (right). Source: After Harris et al. 1981, p.12.

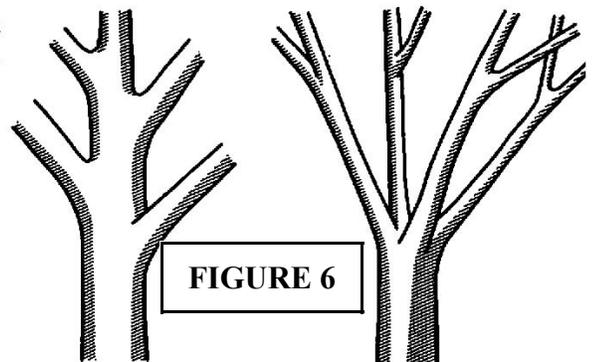


FIGURE 6